

REMARKS

By way of the present response, claims 31-33 are added. Claims 1-33 currently are pending. Applicant respectfully requests reconsideration and withdrawal of the rejection of the claims.

On page 2 of the Office Action, the title of the invention was objected to for not being descriptive. In response, Applicant has amended the title according to a title suggested by the Examiner. It is respectfully submitted that the Examiner's concerns regarding the title of the invention have been fully addressed by this amendment.

Starting on Page 3 of the Action, claims 1-5, 7-11 and 13-16 were rejected under 35 U.S.C. 102(b) as allegedly being unpatentable over Yamazaki et al. (EP Patent No. 0 485 233, hereinafter "the '233 patent"). This rejection is respectfully traversed.

In the most recent Office Action, the Examiner states that Applicant's arguments filed on June 9, 2005, are "moot in view of the new grounds for rejection." It is respectfully submitted, however, that the arguments concerning the '233 patent set forth Applicant's response of June 9th are not moot because the Examiner continues to rely on this document.

For instance, on pages 7 to 8 of the response, Applicants pointed out that the '233 patent does not teach or suggest the combination of features recited in independent claims 1, 7 and 17. For instance, Applicant argued that the '233 patent fails to teach or suggest the claimed feature of an impurity concentration in an interface between the first insulating film and the second insulating film that is higher than an impurity concentration in an interface between the second insulating film and the channel region, as set forth in claims 1, 7, and 17. In particular, Applicant pointed out that Figure 11A of the '233 patent, which the Examiner relied upon for showing a multi-layer SiO₂ film 32 including a first insulating film (i.e., layer 32a) and a second insulating film (i.e., layer item 32b), does not mention any particulars regarding an impurity concentration *in an interface*, for example, between the layer 32a and layer 32b, and between the layer 32b and the channel (i.e., region 28), much less that an impurity concentration in an interface between the layers 32a and 32b is higher than an impurity concentration at an interface between the layer 32b and the channel region 28.

The present Office Action also asserts that Figure 11A shows "an impurity concentration in an interface between the second insulating film (32b) and the channel region (28) (E11 atom-cm⁻³)." However, "E11 atom-cm⁻³" mentioned in the Action does not appear

to relate to “an impurity concentration in an interface ...,” as claimed. Rather, this appears to refer to an *interface state density* of $2 \times 10^{11} \text{ cm}^{-3}$, as discussed on page 10, lines 31-33 of the ‘233 patent. In this regard, those skilled in the art would understand that state density (i.e., density of states) represents the number of quantum states in a certain energy range¹, and that an interface state density is a state density in an interface. Those skilled in the art also would understand that a density of states is given in numbers/unit volume – unit energy, or typically, a number of states/ $\text{cm}^3 - \text{eV}$. By contrast, an “impurity concentration” is given in number of atoms/ cm^3 . Thus, a density of states as described in the ‘233 patent does not mean an impurity concentration in an interface between a second insulating film and a channel region as set forth in the pending independent claims.

If the Examiner maintains this rejection, he is requested to point to the specific page and line numbers of the of the ‘233 patent relied upon for allegedly describing the claimed features of “an impurity concentration in an interface between said first insulating film and said second insulating film is higher than an impurity concentration in an interface between said second insulating film and said channel region.” If the Examiner considers such features not to be explicitly described, but inherently disclosed, he must provide extrinsic evidence or sound technical reasoning supporting such an assertion and it must make clear that the missing descriptive matter is necessarily present in the thing described in the reference. See MPEP §2112 and the caselaw cited therein. Absent such a showing with respect to the ‘233 patent, the Examiner has not established a *prima facie* case of anticipation. As such, the Section 102 rejection of claims 1 and 7 is improper and should be withdrawn.

The Office Action also includes a rejection of claims 17-21, 23, 24, 29 and 30 under 35 U.S.C. §103 as allegedly being unpatentable over the ‘233 patent in view of Yamazaki (Japanese Patent No. 06-296023, hereinafter, “the 023 patent”). However, as pointed out above and in Applicant’s June 9th response, neither the ‘233 patent nor the ‘023 patent teach or suggest features relating to “an impurity concentration in an interface between said first insulating film and said second insulating film is higher than an impurity concentration in an interface between said second insulating film and said channel region,” as set forth in claim

¹ See, McGraw-Hill, “Dictionary of Scientific and Technical Terms,” Fifth Edition, New York, 1993, page 541, which is attached hereto. The Examiner is requested to indicate consideration of this citation by returning to the undersigned an initialed copy of the attached PTO-Form 1449 listing this reference.

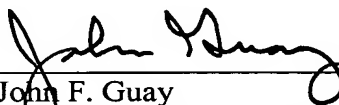
17. Moreover, "E11 atom-cm⁻³" as cited in the Office Action, which appears to relate description in the '233 patent of an interface density of states, does not disclose or suggest an impurity concentration in an interface as claimed. Hence, claim 17 is considered allowable.

The Office Action also includes Section 103 rejections of claims 6 and 12 over the '233 patent in view of the Kim et al. patent, and of claim 22 over the '233 patent in view of the '023 patent and Kim et al. However, as pointed out above and in Applicant's June 9th response, neither Kim et al. nor the '023 patent make up for the shortcomings of the '233. Hence, claims 1, 7 and 17, and respective dependent claims 6, 12 and 22 are allowable.

The remaining rejected claims 2-5, 8-11, 13-16, 18-21 and 23-30, and new claims 31-33, depend from one of independent claims 1, 7 and 17, and therefore are allowable at least for the reasons pointed out above, and further for the additional features recited. Because the distinction between independent claims 1, 7 and 17 and the applied art is clear, Applicants will not belabor discussion of each and every rejected dependent claim. Applicants note, however, that further distinctions exist therein.

All rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance, and prompt notice of the same is earnestly sought.

Respectfully submitted,



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